

REMARKS

Applicant has amended claim 1 to include the subject matter of claims 4, 10, and 11, and cancelled claims 4, 10, and 11, without prejudice or disclaimer of subject matter. Claims 1, 3, 5-9, and 12-26 are pending.

Claim Objections

Applicant has amended claim 6 as suggested by the Examiner. Therefore, Applicant respectfully requests withdrawal of the claim objections.

Claim Rejections – 35 U.S.C. § 112

Applicant has amended claims 19, 25, and 26 to address the Examiner's concerns. Therefore, Applicant respectfully requests withdrawal of the section 112 rejections.

Claim Rejections – 35 U.S.C. §§ 102 & 103

Applicant has amended claim 1 to include the limitations of claims 4, 10, and 11. The Examiner has rejected claim 4 as obvious over Crook in view of Nayar, rejected claim 10 as obvious over Crook in view of Dolman, and rejected claim 11 as obvious over Crook.

Applicant respectfully request withdrawal of the rejections for at least the following reasons.

Amended claim 1 relates to a method of forming a carbide-containing ferroalloy welding consumable material having specific composition requirements for the ferroalloy. The method includes melting solid feed materials, with at least one of the feed materials being a source of free carbon. The method also recites that the feed materials be selected so that the resultant carbide-containing ferroalloy welding consumable material formed from the melt have a chromium/carbon ratio of less than 7.0 and a chromium content in a range of 30-65% by weight. These composition requirements define the carbide-containing ferroalloy and place the method requirement of adding a source of free carbon into context - the free carbon makes it possible to

produce a carbide-containing ferroalloy having a chromium/carbon ratio of less than 7.0 when the chromium content is in the range of 30-65% by weight.

Crook discloses a nickel-based alloy that contains elements including chromium and carbon. While the chromium range described in Crook overlaps with the chromium range of amended claim 1, in contrast to the claimed method, the chromium/carbon ratio of Crook is well above the claimed chromium/carbon ratio of less than 7.0. Furthermore, the nickel-based alloys of Crook are different from the formed ferroalloy of claim 1. Crook does not provide any examples of a method for forming a carbide-containing ferroalloy as set forth in amended claim 1, and there is no description or suggestion in Crook of the respective ingredients that could be mixed to form the claimed melt.

Dolman relates to forming a casting of a hypereutectic white iron alloy. Dolman is not concerned with producing "a carbide-containing ferroalloy welding consumable material for subsequent use for producing a hardfacing" as recited in claim 1. Dolman refers to castings having a minimum thickness of 10 mm. The examples in Dolman relate to 3 dimensional abrasion and wear resistant components that are formed as castings from molten alloy. Example 1 relates to a hammer tip, Example 2 relates to a blow bar, and the remaining examples relate to grizzly bars, coal pulverizers, slurry spray nozzles, bone pulverizers, ore chute liners, crusher liner plates, and hammer mill components. The paragraph bridging pages 3 and 4 of Dolman states that "Thus, while some of the patent literature detailed above proposes the use of hypereutectic white irons, this principally is in relation to hardfacing alloys. The casting of such irons conventionally is avoided in foundry practice, due to the formation of coarsely acicular M₇C₃ primary carbides which can cause extensive cracking of a casting in the mould or premature brittle failure under repeated impact loading conditions in service". Dolman is concerned with producing castings from the alloy that are not subject to these disadvantages. These are disadvantages associated with castings. The castings are formed from molten alloy in a foundry. The composition of Dolman and the microstructural requirements of the castings formed from the Dolman composition are the result of overcoming the casting and in-service problems. A skilled person looking to produce "a carbide-containing ferroalloy welding

consumable material for subsequent use for producing a hardfacing” would not look to the disclosure in Dolman as a source of a potential hardfacing alloy. Moreover, even if one skilled in the art did consider Dolman in this context, the skilled person would see Crook and Dolman as disclosing entirely different alloys and would not regard it as obvious to form the alloy by the method disclosed in Crook.

The Examiner cites Nayar for describing a process includes adding free carbon. There is no description or suggestion in Nayar of adding free carbon in a method with the claimed chromium/carbon ratio and chromium content. The additional applied secondary references do not overcome the deficiencies in Crook, Dolman and Nayar discussed above.

Therefore, Applicants request withdrawal of the section 102 and 103 rejections of claim 1 and its rejected dependent claims. Furthermore, claims 15, 19 and 20 and there rejected dependent claims are patentable over the applied references for at least the reasons discussed above.

The Examiner has rejected claim 15 and 20 as anticipated by or obvious over Hulsewig. Hulsewig discloses a welding electrode that has a core rod made from an alloy of a first composition and an outer sheath made from an alloy of a second composition. Neither the core rod nor the outer sheath has “a chromium/carbon ratio of less than 7.0 and a chromium content in a range of 30-65% by weight”.

Therefore, Applicants request withdrawal of the section 102 and 103 rejections of claims 15 and 20 over Hulsewig.

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Conclusion

The Applicants do not acquiesce to the Examiner's characterizations of the art, and reserve the right to address the characterizations of the art in further prosecution of this or a subsequent application. The absence of an explicit response by the Applicants to any of the examiner's positions does not constitute a concession of the examiner's positions.

It is hereby petitioned that the period for response to the Office Action be extended for three (3) months. Please apply any charges or credits to deposit account 06 1050.

Respectfully submitted,

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